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IN THE

Supreme Court of the United States

S.D. WARREN COMPANY,
Petitioner,

v.

MAINE BOARD OF ENVIRONMENTAL PROTECTION,
Respondent.

On Writ of Certiorari to the Maine Supreme Judicial Court

AMICUS CURIAE BRIEF OF NATIONAL WILDLIFE FEDERATION, *ET AL.*, IN SUPPORT OF THE RESPONDENT

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[Other *Amici* Listed Inside Front Cover]

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OTHER *AMICI*

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INTEREST OF *AMICI*

The amici curiae listed above are a broad array of national, regional, state and local organizations with a strong and demonstrated interest in protecting our Nation's waters and ensuring the proper implementation of the Clean Water Act (CWA or Act). Throughout the history of the Act, these organizations have collectively pursued this interest at the state and federal levels through testimony before legislatures, participation in administrative actions, and litigation in the courts. These organizations' members seek to protect their use of the Nation's waters for a wide array of purposes including swimming, boating, fishing, hunting, scientific study, drinking water and food supply.[1]

SUMMARY OF ARGUMENT

Dams cause pollution. While they provide many benefits, dams have a significant impact on the water quality of hundreds of thousands of stream and river miles across the United States.[2] In this country, we have built over seventy-nine thousand large dams.[3] Dams are located in every major watershed in the United States and are one of the most

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[1] Pursuant to S. Ct. R. 37.3(a) and 37.6, the undersigned represents that (1) all parties consented to the filing of this brief, (2) no counsel for any party authored this brief in whole or part, and (3) no person or entity other than the above-named amici curiae and their counsel made a monetary contribution to the preparation or submission of this brief.

[2] U.S. National Park Service, *River and Water Facts*, *available at* http://www.nps.gov/rivers/waterfacts.html ("Currently, 600,000 miles of our rivers lie behind an estimated 60,000 to 80,000 dams.").

[3] The U.S. Army Corps of Engineers (Corps) has compiled data on approximately 79,000 large dams (dams are defined by the Corps as "large" if (1) over six feet high with more than fifty acre-feet of storage, (2) over twenty-five feet high with more than fifteen acre-feet of storage, and (3) any dam that poses a significant downstream threat to human lives or property). U.S. Army Corps of Engineers, *National Inventory of Dams*, *available at http://crunch.tec.army.mil/nid/webpages/nid.cfm*.

significant factors affecting the ecological health of the Nation's river systems.[4] The water quality impacts of dams include changes to the physical, chemical and biological characteristics of waters both upstream and downstream of the dams. These changes, defined as "pollution"[5] under the Clean Water Act, are a major obstacle to the maintenance and recovery of the many uses, from recreation to subsistence, the American public makes of our nation's rivers and streams.

For this reason, Congress gave states, tribes and the federal government the authority to address the kinds of water quality impacts created by dams through the Clean Water Act. One of the Act's tools for controlling such impacts is the authority given to states under Section 401(a)(1) to issue or withhold water quality certifications as a pre-condition to the issuance of federal licenses for activities which involve "any discharge" into navigable waters. 33 U.S.C. § 1341(a)(1).[6] The Act does not require the "addition of pollutants" in order to trigger Section 401; the flow of water through a dam is sufficient. A plain reading of the Clean Water Act makes clear that the term "discharge" as used in Section 401 is intentionally broad enough to authorize state water quality certifications for the relicensing of dams like S.D. Warren's.

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[4] Dynesius M. and C. Nilsson, *Fragmentation and Flow Regulation of River Systems In The Northern Third Of The World*, 266 Science 753-762 (November 4, 1994); Graf, W.L., *Dam Nation: A geographic census of American dams and their large-scale hydrologic impacts*, 35(4) Water Resources Research 1305-1311 (April 1999).

[5] "The term 'pollution' means the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water." 33 U.S.C. § 1362(19).

[6] Section 401(a)(1) refers to states as the primary implementers of the water quality certification provision. 33 U.S.C. § 1341(a)(1). In some cases, the United States Environmental Protection Agency (EPA), inter-state agencies, and Tribes are authorized to issue water quality certifications. For ease of reference, this brief will refer to "state" authority as a substitute for "federal, tribal and state" authority.

Such dams interfere with the achievement of uses designated in state water quality standards and thereby cause "pollution."

S.D. Warren argues that this Court should ignore Section 401's plain language and instead import new language that creates a gaping hole in the ability of states to protect and restore the water quality of their rivers and streams. To accept S.D. Warren's argument that Section 401 of the Act should not apply to the discharge of water through dams unless there is a "discharge of pollutants" would not only require this Court to misconstrue the language, structure and goals of the Clean Water Act, but to ignore a wealth of widely-accepted scientific literature and federal agency, judicial and legislative findings.

Through the application of Section 401, states are making real progress in protecting and restoring the biological, physical and chemical integrity of those of the Nation's waters impacted by dam pollution. States will, however, be unable to fulfill their congressionally authorized responsibility to protect water quality in the absence of authority to issue water quality certifications. For this reason, this Court should summarily reject S.D. Warren's reading of the Act and affirm the Maine Supreme Judicial Court's decision.

ARGUMENT

The issue before this Court as framed by S.D. Warren is whether Section 401 state water quality certification authority is triggered only where a dam results in a "discharge of a pollutant." The real issue, however, is much broader: whether states have the authority under Section 401 to protect the full range of uses designated under federally approved state water quality standards which are impacted by hydropower dams.

A good starting point for addressing this issue is to ask what Congress meant by its policy "to recognize, preserve and protect the primary responsibilities and rights of States

to prevent, reduce and eliminate pollution." 33 U.S.C. § 1251(b). Looking to the Act, "pollution" is defined as encompassing all human activities that alter the chemical, physical and biological integrity of water. 33 U.S.C. § 1362(19). Consistent with this broad definition and in order to achieve the Act's ambitious policy, Congress authorized states to protect and restore beneficial uses of rivers and streams through the adoption and achievement of water quality standards. 33 U.S.C. § 1313. These standards are a powerful tool for combating pollution because they include not only numerical criteria, but designated uses adopted pursuant to the Act's goal to provide for "the protection and propagation of fish, shellfish and wildlife" and "for recreation in and on the water." 33 U.S.C. §1251(a)(2). As this Court has decided previously, it is the protection of these uses that is at the core of the Act's purpose and goals. *PUD No. 1 of Jefferson County v. Washington Department of Ecology*, 511 U.S. 700, 716-719 (1994) (*PUD No. 1*).

In recognition that federally licensed activities like hydropower dams may impair designated uses, Congress authorized state water quality certifications through Section 401 in order to protect these uses and achieve water quality standards. Congress used the inclusive term "discharge" in Section 401 to ensure that states would have the opportunity to address the water quality impacts of a wide array of federally licensed activities, including hydropower dams. This Court has already concluded that state water quality certifications issued for dams may include conditions "as necessary to enforce a designated use contained in a state water quality standard." *PUD No. 1* at 723. The validity of this conclusion, apparent from the language of the Act, becomes even clearer in the light of the consensus among scientists, government agencies and the courts that dams such as S.D. Warren's cause pollution and impact designated uses.

I. DAMS CAUSE POLLUTION

As established by well-accepted scientific literature,[7] hydropower dams such as S.D. Warren's present a variety of water quality impacts to river and stream ecosystems as well as to the ponds, lakes, wetlands, estuaries and bays interconnected with the impounded rivers and streams. The type and degree of impact varies for each hydropower project depending upon the type of dam, its manner of operation and the nature of the river or stream system where it is located.[8] The fact that a dam is a "run of the river" dam in which the discharge from the dam is generally equivalent to the inflow into the reservoir above the dam does not eliminate these harms.[9]

When free flowing rivers are impounded behind hydropower dams, they frequently stratify into layers of warmer waters on top and colder, oxygen-deprived waters below, with neither temperature reflecting the natural condition of

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[7] For three compilations of studies and research papers regarding the environmental impacts of dams, *see* (1) U.S. Environmental Protection Agency, *EPA's Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters*, Chapter 6, Section VI.B. *available at http://www.epa.gov/nps/MMGI/Chapter6/ch6-6.html*; (2) H. John Heinz III Center for Science, Economics and the Environment, *Dam Removal: Science and Decision Making*, References, 207-221 (2002) available on-line at *http://www.heinzctr.org/NEW_WEB/PDF/Dam_removal_full_report.pdf*; and (3) American Rivers, *American Rivers Dam Removal Toolkit Bibliography, available at http://www.americanrivers.org/site/PageServer?pagename=AMR_content_2d1c.*

[8] Poff, N.L. and D. D. Hart, *How Dams Vary and Why It Matters for the Emerging Science of Dam Removal*, 52(8) Bioscience 659-668 (August 2002), *available at http://rydberg.biology.colostate.edu/poffpubs/Poff2002(BioScience_dams).pdf* (*How Dams Vary*).

[9] *Id* at 661-662 (noting that distinctions between the various operational classes of dams are imprecise and recommending the use of ecological classifications as providing a more useful tool for evaluating the environmental impacts of dams).

the river system.[10] The temperature levels also impact the levels of oxygen in the water below the dam. The amount of oxygen in the water column, in turn, has a dramatic impact on the kinds of organisms that can survive below the dam.[11] The varying temperatures and oxygen levels in the reservoir also affect the water chemistry of the entire system and can cause toxic chemicals such as hydrogen sulfide and ammonia to be released in harmful concentrations.[12]

Another water chemistry impact associated with hydropower dams involves the entrainment or supersaturation of atmospheric gases into the water column occurring when air and water are mixed in a turbine or at a spillway. These gases, such as nitrogen, can remain dissolved in the water downstream from the dam. In their dissolved form, these gases are taken into the circulatory systems of fish and other organisms with gills. As the fish move to different levels of the river, those gases come out of solution, forming bubbles

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[10] Peterson, M.J. et. al., U.S. Department of Energy, *Regulatory Approaches for Addressing Dissolved Oxygen Concerns at Hydropower Facilities*, DOE/ID-11071 (March 2003) at 1-5, *available at* http://hydropower.id.doe.gov/turbines/pdfs/doeid-11071 (*Regulatory Approaches*); *How Dams Vary* at p. 660; McCartney, M.P., C. Sullivan, M.C. Acreman, Center for Ecology and Hydrology, UK, IUCN – The World Conservation Union, *Ecosystem Impacts of Large Dams*, Contributing Paper to the World Commission on Dams, at 21 *further information available at http://www.dams.org* (*Ecosystem Impacts of Large Dams)*; Collier, M., R.H. Webb and J.C. Schmidt, U.S. Geological Survey, *Dams and Rivers: Primer on the Downstream Effects of Dams*, USGS Circular 1126 (1996) at 58, *available at http://pubs.er.usgs.gov/pubs/cir/cir1126* (describing the effect of temperature on fish below the Flaming Gorge dam on the Green River)(*USGS Primer*).

[11] *Id.*

[12] *Regulatory Approaches* at 1.

that can cause a potentially lethal effect similar to the "bends" in scuba divers.[13]

The impoundment of water in reservoirs behind hydropower dams may result in changes to the flow regimes of rivers with significant impacts to downstream aquatic ecosystems.[14] Dams also affect the total volume of water in the river systems below the dams through evaporation and seepage.[15] In addition to reducing habitat for fish and wildlife, evaporation can also affect water quality by increasing salinity.[16] Further, hydropower dams frequently divert water from its natural course to produce power, creating a "bypass reach" just below the dams in which a stretch of the entire stream or river is dewatered, creating even more dramatic reductions in habitat and losses of use.[17]

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[13] Abernathy, C.S., B.G. Amidan, U.S. Department of Energy, *Laboratory Studies of the Effects of Pressure and Dissolved Gas Supersaturation on Turbine-Passed Fish*, DOE/ID-10853 (March 2001) at 2.3-2.5, *available at http://hydropower.id.doe.gov/turbines/pdfs/doeid-10853.pdf*; National Research Council, National Academy of Sciences, *Upstream: Salmon and Society in the Pacific Northwest*, (1996), at 229, *available at http://books.nap.edu/books/0309053250/html/index.html* (*Upstream*).

[14] Poff, L.N. et. al., *The Natural Flow Regime: A Paradigm for River Conservation*, 47(11) Bioscience 769-784 (December 1997), *available at* http://rydberg.biology.colostate.edu/poffpubs/Poff1997%28BioScience_NFR%29.pdf; World Commission on Dams, *Dams and Development: A New Framework for Decision-Making*, (November 2000) at 78-81 *available at http://www.dams.org/* (*Dams and Development*).

[15] *Ecosystem Impacts of Large Dams* at 14, 19-20 (noting estimates that one third of the Colorado River's flow is evaporated from behind dams); *Dam Nation*, at 1308.

[16] *Ecosystem Impacts of Large Dams* at 14; *USGS Primer* at 43.

[17] National Research Council, National Academy of Sciences, *New Strategies for America's Watersheds*, (1999), at 24, *available at http://www.nap.edu/books/0309064171/html/*; for one particularly dramatic example, *see* discussion of the restoration of the bypass reach below Lake

In addition to these impacts, hydropower dams without fish ladders serve as a physical barrier to migrating fish seeking to spawn upstream.[18] Further, fluctuations in river or stream levels can impair fish reproduction by interfering with the spawning habits of fish.[19] Another physical impact of dams is the damage to riparian habitat resulting from the diminished connectivity between the river and adjoining forest. This leads to reduced overbank flooding and the loss of the associated nutrient and sediment input that is essential to the native plant and animal life adapted to floodplain habitats.[20] Conversely, when not impaired by dam operations, the connectivity between the river and forest leads to a direct improvement of water quality due to the utilization of nutrients by plant communities.[21]

In some river systems, the releases from dams of low sediment water may cause channel incision, significantly

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Chelan in Washington by Chelan Public Utility District, *Chelan River (Bypassed Reach) Comprehensive Management Plan, Lake Chelan Hydroelectric Project*, FERC Project No. 637 (December 2001) at 2-4 *available at http://www.chelanpud.org/relicense/study/reports/6149_6.pdf.*

[18] *Upstream* at 231; *Dams and Development* at 82-83; *USGS Primer* at 22 (Snake River dams block salmon migration).

[19] Bednarek, A.T., *Undamming Rivers: A Review of the Ecological Impacts of Dam Removal*, 27(6) Environmental Management 803-814 (June 2001)(concluding that the restoration of an unregulated flow regime by dam removal enhances preferred spawning grounds); *Upstream* at 229 (fluctuations in flow and depth can lead salmon to construct nests in unsuitable places and strand juvenile salmon).

[20] Ligon, F.K., W.E. Dietrich, W.J. Trush, *Downstream Ecological Effects of Dams*, 45(3) Bioscience 183-192 (March 1995); *Dams and Development* at 83-84; *USGS Primer* at 46-53 (sedimentation of the Platte River has dramatically diminished sandhill crane habitat).

[21] Tremolieres, M. , et. al., *Impact of river management history on the community structure, species composition and nutrient status in the Rhine alluvial hardwood forest*. 135 Plant Ecology 59-78 (1998).

changing river bed composition and riparian habitat.[22] The retention of sediment behind dams also has major impacts on downstream estuaries and wetlands.[23] Finally, the dramatic changes by hydropower projects to the ordinary flow regime of rivers can also make it dangerous or even impossible for people to use the rivers below dams for swimming or boating. The U.S. Geological Survey "Primer" on the downstream effects of dams notes that anglers in the Chattahoochee River are swept downstream every year in spite of warning signs and sirens.[24]

Collectively, even in the absence of a discrete discharge of pollutants, the harm attributable to hydropower dams covers the full range of water quality impacts that the Act defines as "pollution." It was this range of impacts that Congress authorized states to address through Section 401 as an important tool for restoring and protecting the chemical, physical and biological integrity of the Nations's waters. 33 U.S.C. § 1251(a). The conclusion that dams harm rivers is not one reached only recently,[25] nor is it a conclusion shared

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[22] *Dams and Development* at 81; *How Dams Vary* at 660; *USGS Primer* at 38-45 (heavy downstream erosion of the Chattahoochee River below Buford Dam as a result of dam releases).

[23] *Upstream* at 234-35 (noting the loss of over 20,000 acres of tidal swamps, 10,000 acres of tidal marshes, and 3,000 acres of tidal flats in the past century from the Columbia River estuary as a result of the accumulation of sediment behind dams).

[24] *USGS Primer* at 42.

[25] A review of bibliographies and reference lists relating to the environmental impacts of dams reveals scientific articles that pre-date the Clean Water Act. *See e.g.* Beiningen, K.T. and W.J. Ebel, *Effect of John Day Dam on dissolved nitrogen concentration and salmon in the Columbia River, 1968*, 99 Transactions Am. Fish. Soc'y 664-671 (1970); Pauley, G.B. and R.E. Nakatani. *Histopathology of "gas bubble" disease in salmon fingerlings*. 24 J. Fish. Res. Board Can. 867-871 (1967); and Westgard, R.L. *Physical and biological aspects of gas-bubble disease in*

only among academics and researchers. This conclusion is one shared by state and federal agencies and by the Courts.

A. Federal and State Agencies Have Concluded That Dams Cause Water Pollution

1. *Environmental Protection Agency And State Water Pollution Control Agencies*

The U.S. Environmental Protection Agency (EPA) and state water pollution control agencies have developed significant expertise in the measurement and evaluation of pollution impacts over the history of the Federal Water Pollution Control Act. These agencies have repeatedly evaluated the impacts of dams and determined that dams impact water quality.

In the 1972 Federal Water Pollution Control Act Amendments, Congress directed EPA to develop guidelines and methods to control pollution from "changes in the movement, flow, or circulation of any navigable waters or ground waters, including changes caused by the construction of dams." 33 U.S.C. § 1314(f)(1) & (2) part (F). One year later, in response to this directive, EPA published a report entitled "Control of Pollution from Hydrographic Modifications," EPA Doc. No. 4 03/9 -73-017 (1973). In this report, EPA described the water quality problems caused by dams including lowered dissolved oxygen levels and other impacts. *Id.*

Again indicating Congressional awareness of the pollution created by dams, the 1987 Amendments to the Federal Water Pollution Control Act required EPA to conduct a study of the water quality impacts of dams. Pub.L. No. 100-4, Title V, §524, 101 Stat. 89 (1987). EPA submitted this report to Congress in 1989 and provided an updated account of the substantial adverse water quality impacts from stratification

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impounded adult chinook at McNary spawning channel. 93 Transactions Am. Fish. Soc'y 306-309 (1964).

of impounded water behind dams including "low hypolimnetic dissolved oxygen, increased iron and manganese, eutrophication, hydrogen sulfide, sediment movement, flow regulation, thermal changes, and reaeration denial." U.S. Environmental Protection Agency, *Report to Congress: Dam Water Quality Study*, EPA 506/2-89/002 (March 1989) at v. EPA concludes in this report that "[i]mpoundments can modify the physical, chemical, and biological characteristics of the free-flowing aquatic ecosystem." *Id.* at VII-2.

At the state level, reference to individual state water quality plans submitted to EPA as required under the Act provides additional insights into the kinds of water quality impacts seen by state water pollution control agencies as they evaluate watersheds affected by dams. The plans are developed pursuant to the CWA Section 303 requirement that states develop "Total Maximum Daily Loads" (TMDLs). In these TMDL reports, states must evaluate the sources and levels of pollution into water quality impaired waters. 33 U.S.C. § 1313(d).

A recent TMDL report prepared by the State of Washington and EPA in cooperation with the Spokane Tribe describes the water quality impacts of seven hydropower dams on a segment of the Columbia River. Specifically, the report concludes that these dams are causing violations of the water quality standard for dissolved gas. The implementation plan in the report relies heavily on Section 401 as an important tool for the achievement of the dissolved gas standard through its application to the federally licensed hydropower dams operated by public utility districts:

> The only significant sources of [total dissolved gas] within the TMDL area are the hydroelectric projects. The details of implementation of this TMDL will be developed as the [public utility district] projects on the Mid-Columbia reapply for [Federal Energy Regulatory

> Commission (FERC)] licenses and water quality certifications under Clean Water Act Section 401.

U.S. Environmental Protection Agency, Washington Department of Ecology and Spokane Tribe of Indians, *Total Maximum Daily Load for Total Dissolved Gas in the Mid-Columbia River and Lake Roosevelt*, (June 2004) at x-xi, *available at http://www.ecy.wa.gov/pubs/0403002.pdf.*

In a related TMDL being developed by EPA in conjunction with the States of Idaho, Oregon and Washington, and the Spokane and Colville Tribes, EPA has concluded that hydropower dams are the major cause of water temperature standard violations in the Columbia/Snake River basin. U.S. Environmental Protection Agency, *EPA Region 10 Fact Sheet No. 6*, Columbia/Snake River Problem Assessment for Temperature, Fall 2001, *available at http://yosemite.epa.gov/R10/WATER.NSF/840a5de5d0a8d1418825650f00715a27/a2d0d5ba536f136288256a94006304a4/$FILE/cr%20tmdl%20fs%20%233%209-10.pdf.* As is true for state efforts to address violations of the dissolved gas standard in the Columbia River, the affected states and tribes will need CWA Section 401 authority in order to address the contributions to temperature violations by FERC licensed dams.

On the other coast, the State of Maine has identified the "presence of many dams" as a major cause of water quality impairment in the Salmon Falls River watershed. U.S. Environmental Protection Agency, *EPA-New England's Review of Maine's Salmon Falls/Piscataqua River TMDLs*, November 1999, at 6, *available at http://www.epa.gov/region1/eco/tmdl/assets/pdfs/me/salmonfallsriver.pdf.* In this report, EPA notes its approval of Maine's conclusion that changes to dam operations are necessary in order to achieve water quality standards for dissolved oxygen. *Id* at 7.

The information compiled and developed by these administrative agencies tasked with protecting the nation's water

quality clearly and unequivocally demonstrates that dams, particularly hydropower dams, cause pollution.

2. *Federal Energy Regulatory Commission*

The Federal Energy Regulatory Commission (FERC), which has the primary responsibility for licensing hydropower facilities under the Federal Power Act, has considered the water quality impacts of many dams and likewise has concluded that dams cause pollution. For instance, in holding that the City of Augusta, Georgia was required to seek a Section 401 certification for an existing diversion dam, FERC stated,

> [W]e cannot conclude based on the record here that the operation of the project does not in any way alter the characteristics of the water that flows over the diversion dam. Water passing through the project impoundment may be changed in temperature or in chemical composition. Also, the act of flowing over the dam may alter certain characteristics of the water, such as its dissolved oxygen content.

City of Augusta, Georgia, 109 FERC ¶ 61,210, 62,006-62,007 (November 2004) (Order on Reconsideration). In another decision with an extensive discussion of the applicability of Section 401 to a dam in Maine, FERC noted the potential water pollution from dams:

> Depending on how they are operated, dams and the reservoirs they impound can result in a discharge of water that is warmer or colder, more or less turbid, or containing greater or lesser amounts of dissolved gases or sediments, including various contaminants, than would otherwise be the case for the body of water receiving the discharge.

FPL Energy Maine Hydro LLC, 111 FERC ¶ 61,104 (April 2005) (Order Denying Rehearing).

These FERC decisions confirm an understanding shared by other federal agencies with a role in evaluating or managing the environmental impacts of dams. *See e.g.* U.S. Fish and

Wildlife Service, *Hydropower: Environmental Issues*, at *http://www.fws.gov/habitatconservation/hydro_issues.pdf* (describing impacts of dams on temperature, dissolved oxygen, dissolved nitrogen, fish passage, and riparian habitat); Tennessee Valley Authority, *Water Quality* at *http://www.tva.gov/environment/water/index.htm* (discussing efforts of the Authority to address low dissolved oxygen and inadequate flows); and U.S. Department of Energy, *Hydropower: Environmental Issues and Mitigation*, at *http://www.eere.energy.gov/RE/hydro_enviro.html* (noting problems with hydropower dams including fish passage, low dissolved oxygen and inadequate flows).

B. Federal And State Courts Have Concluded That Dams Cause Water Pollution

This Court's decision in *PUD No. 1 of Jefferson County v. Washington Department of Ecology*, 511 U.S. 700 (1994), recognizes the impacts of dams on water quality. Discussing the proposed hydropower dam on the Dosewallips River, the Court noted,

> [A] sufficient lowering of the water quantity in a body of water could destroy all of its designated uses, be it for drinking water, recreation, navigation or, as here, as a fishery.

Id. at 719. In finding that the proposed dam's impacts on flows were within the purview of state regulation under Section 401, the Court described Congress' "broad conception of pollution" as evincing a concern with the "physical and biological integrity of water." *Id.* Further, the Court cited Section 304(f) of the Act, 33 U.S.C. § 1314(f), as an express recognition by Congress that "water 'pollution' may result from 'changes in the movement, flow, or circulation of any navigable waters . . . , including changes caused by the construction of dams." *Id.* at 720.

After reviewing considerable evidence and scientific testimony in *National Wildlife Federation v. Gorsuch*, 530 F.Supp.

1291, 1295 (D.D.C. 1982), 693 F.2d 156, 161 (D.C. Cir. 1982), a federal district court and court of appeals both concluded that dams have significant water quality impacts. While dealing with the applicability of Section 402, 33 U.S.C. § 1342, not Section 401,[26] the *Gorsuch* decisions are highly relevant to this Court's evaluation of whether Section 401 applies because of the courts' thorough description of the water quality impacts of dams. In its decision, the D.C. Circuit summarizes several of the major impacts dams can have on water quality: (1) low dissolved oxygen; (2) dissolved minerals and nutrients; (3) temperature changes; (4) sediment; (5) supersaturation (dissolved gas); and (6) a variety of other water quality impacts including indirect negative impacts on groundwater and reductions in stream flow and waste assimilation capacity. 693 F.2d at 161-165. Both courts' observations were carefully supported by a detailed record developed over the course of a three-day trial, including testimony by experts and EPA documents such as the 1973 EPA report "Control of Pollution from Hydrographic Modifications," EPA Doc. No. 4 03/9 -73-017 (1973).

Other circuits have endorsed the legal and factual analysis of the *Gorsuch* holding that a Section 402 NPDES permit is not required when there is no "discharge of pollutants" from a dam, but these courts have also implicitly acknowledged the water quality impact of dams. *See e.g. State of Missouri ex rel. Ashcroft v. Department of the Army*, 672 F.2d 1297, 1304 (8th Cir. 1982) (not questioning that the operation of the dam

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[26] The *Gorsuch* case dealt with an issue not presented in this case: whether dams can be regulated under CWA Section 402 as a point source discharge requiring a National Pollutant Discharge Elimination System (NPDES) permit. Section 402, by its express terms, applies only to "discharges of pollutants." 33 U.S.C. § 1342. In *Gorsuch*, the D.C. Circuit deferred to EPA's decision not to regulate dams under Section 402 but expressly left open the question of whether water pollution from could be addressed by states through other provisions of the Act. *Gorsuch*, 693 at 182-183.

caused "soil erosion and reduction of oxygen"); *U.S. ex rel. Tennessee Valley Authority v. Tennessee Water Quality Control Board*, 717 F. 2d 992, 1000 (6th Cir. 1983) (acknowledging that dams might be subject to state or local regulation as nonpoint sources of pollution); *National Wildlife Federation v. Consumers Power Co.*, 862 F.2d 580, 586 (6th Cir. 1988) (noting that "any resulting pollution in the form of entrained fish is, as in *Gorsuch*, an inherent result of dam operation.").

Many state courts have also concluded that dams impact water quality. In *Power Authority of State of N.Y. v. Williams*, after reviewing a voluminous record, the New York Supreme Court, Appellate Division, upheld a state Section 401 certification on the basis that the hydropower dam at issue would violate state water quality standards. 101 A.D.2d 659, 475 N.Y.S. 2d 901 (N.Y.A.D. 3d Dept. 1984). This conclusion was supported by the record developed in a prior decision in which the court provided a thorough discussion of the water quality impacts of the dam's operation. The court found these impacts included increased turbidity, variations in flow resulting in disruption to fish spawning and food supply, and increased temperature. *Power Authority of State of N.Y. v. Flacke*, 94 A.D.2d 69, 73-75, 464 N.Y.S.2d 252, 255-257 (N.Y.A.D. 3d Dept. 1983).

Similarly, in *Georgia Pacific Corp. v. Vermont Dept. of Envtl. Conservation*, 35 E.R.C. 2046, 2050-51 (Vt. Super. Ct. 1991) aff'd 628 A.2d 944 (Vt. 1992) cert den'd 511 U.S. 1141 (1994), a Vermont Superior Court judge upheld a Section 401 certification issued by the state water pollution control agency for the relicensing of an existing hydropower dam on the basis that the certification conditions were necessary to protect the aesthetic and recreational value of the river. Specifically, the court upheld the state's water quality certification as necessary to maintain dissolved oxygen levels, to "restore and preserve the Connecticut River as a fish

habitat," and to "safeguard the aesthetic appeal of the river to the numerous persons who use the river for recreation." *Id.*

C. S.D. Warren Does Not Dispute That Its Dams Cause Water Pollution

There is ample evidence in the record to support the conclusion that the operation of S.D. Warren's dams results in the pollution of the Presumpscot River as defined by the Act. The Maine Board of Environmental Protection determined that:

> The record in this case demonstrates that Warren's dams have caused long stretches of the natural river bed to be essentially dry and thus unavailable as habitat for indigenous populations of fish and other aquatic organisms; that the dams have blocked the passage of eels and sea-run fish to their natural spawning and nursery waters; that the dams have eliminated the opportunity for fishing in long stretches of river; and that the dams have prevented recreational access to and use of the river.

Joint Appendix (JA) at A-49.

The Board also found that,

> [T]he Dundee and Gambo dams clearly cause or contribute to the current violation of dissolved oxygen standards in several parts of the Presumpscot River. Were these dams not in place and operating in such a way as to reduce natural reaeration, to increase time of travel, to increase water temperature, and to create settling basins for sediments and nutrients, dissolved oxygen standards would be met in the Gambo, Little Falls, and Sacarappa impoundments, particularly under dry weather conditions when the effect of non-point source pollution on dissolved oxygen levels is minimal.

JA at A-51. S.D. Warren did not challenge these findings below nor does it do so here. JA at A-12; *S.D. Warren Co. v. Board of Environmental Protection*, 868 A.2d 210, 218 (Me. 2005).

The State of Maine's findings are consistent with the broad consensus of the scientific community, government agencies and the courts that dams impact water quality.

II. THE CLEAN WATER ACT AUTHORIZES STATES TO PROTECT WATER QUALITY FROM POLLUTION BY DAMS

A. The Plain Language Of Section 401 Authorizes State Water Quality Certifications For Dams

The language of Section 401 is intentionally broad, applying the requirement for an applicant for a federal license to obtain a water quality certification in order to "conduct *any* activity *including*, but not limited to, the construction *or* operation of facilities, which *may* result in *any* discharge into the navigable waters." 33 U.S.C. § 1341 (emphasis added). Each of the emphasized terms demonstrates Congress' deliberate intent to craft a statute that would reach the widest possible set of federally licensed activities.

Further, when defining this provision's critical term, "discharge," Congress again used broad language: "The term 'discharge' when used without qualification *includes* a discharge of a pollutant, and a discharge of pollutants." 33 U.S.C. § 1362(16). The use of the term "includes" makes plain that Congress intended the term "discharge," when used "without qualification," as it is in Section 401, to reach a wider set of activities than just those simply introducing or reintroducing pollutants. Each of the other definitions in Section 502 uses the term "means;" the term "discharge" stands alone as the only term defined using the broader term "includes." 33 U.S.C. § 1362.

Contrary to S.D. Warren's position, the term "discharge" does not require the "addition" of a pollutant in order to trigger Section 401. S.D. Warren incorrectly argues that the Act requires "at a minimum, the addition into the water from a point source of something other than the water itself."

Petitioners Brief at 14. The Act's definition of "discharge" however, in contrast to the definition of "discharge of pollutants," makes no reference to the term "addition." 33 U.S.C. § 1362(12), (19). Under an ordinary dictionary definition, "discharge" in the context of dams is best understood to mean "[a] flowing out or pouring forth," and "something that is discharged [or] released." American Heritage Dictionary 4th Edition, *available at http://www.bartleby.com/61/46/D0254600.html*. Nothing in this definition suggests that something must be added to the flow of water out of a dam before it can be considered a "discharge." The operation of dams causes water to flow out of the dams; the dams release impounded water. Accordingly, S.D. Warren's dams discharge into waters of the U.S. and must obtain a water quality certification from the State of Maine pursuant to CWA Section 401.[27]

B. The Clean Water Act Is Intended To Address Water Pollution From Dams

Reading the term "discharge" within the broader context of the Act provides confirmation that Congress intended the term "discharge" in Section 401 to reach activities, such as the operation of S.D. Warren's dams, which impact water quality.

1. *Congress Expressed Its Intent To Address Water Pollution From Dams Through The Goals And Structure Of The Act*

Congress intended that states have broad authority under the Act to address water "pollution." The term "pollution" is used extensively throughout the Act and is defined as "the man-made or man-induced alteration of the chemical, physical, biological and radiological integrity of water." 33 U.S.C.

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[27] It is also notable that, in *PUD No. 1*, there was no dispute that the Elkhorn Project at issue would result in two possible discharges including "the discharge of water at the end of the tailrace after the water has been used to generate electricity." *PUD No. 1* at 711.

§ 1362(19). In light of the discussion of the water quality impacts of hydropower dams above, there can be no question that dams alter the chemical, physical and biological integrity of water and thus cause "pollution" within the meaning of the Clean Water Act.

In addition to including an expansive definition of "pollution" in the Act, Congress also left numerous indications throughout the statute that it intended the Act's coverage to reach broadly. In the "Goals and Policy" section of the Act, Congress recognized the "responsibilities and rights of states to prevent, reduce and eliminate *pollution*" and specifically stated that federal policy is to support state efforts toward this end through research, technical services and financial aid. 33 U.S.C. § 1251(b)(emphasis added). *See also* 33 U.S.C. 1252(a) (directing EPA to "develop comprehensive programs for preventing, reducing, or eliminating the *pollution* of the navigable waters"); 33 U.S.C. § 1256(a)(authorizing grants to states "for the prevention, reduction, and elimination of *pollution*"); 33 U.S.C. § 1370 (authorizing states to adopt "any requirement respecting control or abatement of *pollution* more stringent than the federal standard."); and 33 U.S.C. § 1323 (requiring federal agencies to meet state requirements for the "control and abatement of water *pollution*.") (emphasis added).

With the Act's heavy emphasis on controlling "pollution" in these provisions, it would be remarkable if Congress had intended to exempt a major source of pollution such as hydropower dams from the state water quality certification requirement of Section 401. Collectively, these provisions demonstrate Congressional intent to capture all sources of pollution within the ambit of the Act. Nothing in the Act suggests that state regulation is limited to only the subset of polluting activities that add discrete particles of contamination to a body of water. In fact, Congress intended the opposite result. The control of "pollution" is a broader task

than just regulating "pollutants." Similarly, the term "discharge" reaches a broader set of activities than the term "discharge of pollutants."

Section 402 covers the subset of polluting activities that involve only the "discharge of pollutants." In order to ensure state authority to address "pollution," Section 401 covers federally licensed activities, otherwise exempt from state regulation, that may cause "any discharge." Only when Section 401 is read in this manner is it possible for states to fulfill the responsibility given to them by Congress "to prevent, reduce and eliminate pollution" through setting and achieving water quality standards.

2. *The Legislative History Of Section 401 Supports A Finding That Congress Intended States To Have The Authority To Require Water Quality Certifications To Address Pollution From Dams*

In light of the plain language of the Act, a review of the legislative history of Section 401 and its precursor, Section 21(b) of the Water Quality Improvement Act of 1970, Pub. L. No. 91-224, 84 Stat. 91 (1970), should be unnecessary. With that said, the legislative history of both laws confirms that Congress was concerned with protecting state authority to address a broad array of potential water quality impacts from federally licensed discharges, not just the addition of pollutants. For instance, the House Report discussing Section 21(b) notes that,

> A wide variety of licenses and permits (construction, operating and otherwise) are issued by various federal agencies. Many of them involve activities or operations *potentially affecting water quality*. The purpose of subsection 11(b) is to provide reasonable assurance (as determined by the affected State, States, or the Secretary of the Interior) that no license or permit will be issued by a federal agency for an activity that through inadequate

> planning or otherwise could in fact become a source of *pollution*.

H.R. Rep. No. 127, 91st Cong., 2d Sess. 1970, *reprinted in* 1970 U.S.C.C.A.N. at 2697 (emphasis added). Nothing in this statement suggests any intent to limit the application of Section 21(b) to just those activities that added discrete pollutants to the water. Instead, the mention of activities "potentially affecting water quality" and that could "become a source of pollution" indicate the broad reach Congress intended this provision to have.

Later, in the debate over the Federal Water Pollution Control Act Amendments of 1972, one of the main authors of the Act, Senator Edmund Muskie, argued in support of Section 401 by stating, "[a]ll we ask is that activities that *threaten to pollute* the environment be subjected to the examination of the environmental improvement agency of the state for an evaluation." 117 Cong. Rec. 38,854 (1971), *reprinted in A Legislative History of the Water Pollution Control Act Amendments of 1972*, volume 2 at 1388 (emphasis added). Section 401 of the Clean Water Act thus represents nothing less than a clear reflection of Congressional intent that states be given the opportunity to certify whether or not federally licensed projects such as hydropower dams will meet state water quality standards.

III. STATE WATER QUALITY CERTIFICATIONS ARE NECESSARY TO ADDRESS POLLUTION FROM DAMS

A. Section 401 Authority Over Pollution From Dams Is Critical To Achievement Of Water Quality Standards

Recognizing the authority of states to address the water quality impacts of dams through Section 401 is essential to fulfilling the ultimate goal set by Congress and defined by EPA for the states: the protection of the full array of uses by the public, including recreation in and on the water and

the propagation of fish, shellfish and wildlife. 33 U.S.C. § 1251(a)(2); 40 C.F.R. § 131.10. In furtherance of this goal, Congress provided for state adoption of water quality standards and implementation of plans in Section 303 to ensure that this broad range of uses is protected. 33 U.S.C. § 1313. Section 303 can thus be viewed as the foundation upon which much of the Act stands. It is the achievement of the water quality standards toward which all efforts are directed, and against which all efforts are measured.

For this reason, in *PUD No. 1*, 511 U.S. at 712-713, this Court appropriately discussed Section 303 at some length. The Court rejected the dam operator's argument that the State of Washington was not authorized to condition issuance of a Section 401 certification on the protection of designated uses, as opposed to specific numerical criteria, in the state's water quality standards. Looking to "the literal terms of the statute," the Court held in *PUD No. 1* that "a project that does not comply with a designated use of the water does not comply with the applicable water quality standards." 511 U.S. at 714-715. Of particular significance to the Court was the specific requirement in Section 401(a)(1) that states certify, *inter alia*, that the discharge will comply with Section 303. 33 U.S.C. § 1341(a)(1). The Court thus held that states may use Section 401 certifications to protect water quality standards promulgated under Section 303.

For further support, the *PUD No. 1* Court looked to Section 401(d) which authorizes "other limitations" in water quality certifications as necessary to ensure that the activity complies with "any other appropriate requirement of State law" including uses designated in the standards. 33 U.S.C. § 1341(d); *PUD No. 1* at 711-12. This determination, that the Act protects uses, not just numerical criteria, is consistent with the conclusion that Section 401 is intended to give states significant authority to address a broad spectrum of harms to waters of the United States such as those caused by hydropower dams.

Reading further into Section 303 demonstrates the importance of viewing state water quality certification authority under Section 401 as an integral part of the Clean Water Act's comprehensive net for capturing sources of pollution. Section 303 requires that states develop and implement plans for recovering any river or stream segments that are not meeting water quality standards. 33 U.S.C. § 1313. Subsection (d) requires states to account for all of the sources of pollution into any such impaired waters through Total Maximum Daily Loads (TMDLs), and subsection (e) requires states to develop plans for addressing those sources. 33 U.S.C. §§ 1313(d), (e); 40 C.F.R. §§ 130.2, 130.5(b)(3), 130.6(c)(1), (6). In order to develop effective plans, states must have authority to address all significant sources of pollution including the water quality impacts of hydropower dams. Recognition of states' Section 401 authority in this kind of case is thus critical to achieving water quality standards.

Conversely, limiting state authority to address dams under Section 401 would remove an important tool from the Act and prevent states from protecting the broad array of uses designated in state water quality standards for the rivers and streams that are impaired as a result of hydropower dam operations. Without authority to address the impact of these dams, states cannot achieve water quality standards though their Section 303(e) water quality plans. States are preempted from regulating FERC licensed hydropower dams independent of federal law.[28] Absent the authority to place conditions on dams through Section 401, states will thus be constrained in their efforts to protect the numeric criteria and

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[28] *First Iowa Hydro-Electric Cooperative v. Federal Power Commission*, 328 U.S. 152, 181 (1946) ("The detailed provisions of the [Federal Power] Act providing for the federal plan of regulation leave no room or need for conflicting state controls."); *California v. FERC*, 495 U.S. 490, 506-507 (1990).

designated uses in state water quality standards promulgated pursuant to Section 303.

B. States Can Make Real Improvements In Water Quality By Addressing The Pollution From Dams In Section 401 Water Quality Certifications

As noted in the first section of this brief, the issue presented to this Court is not a theoretical exercise in statutory construction. States can make real improvements to water quality through the regulation of dams. EPA concluded, in its 1989 report to Congress regarding the water quality impacts of dams, that these impacts can be mitigated through a mix of physical and operational measures and structural changes to dams. EPA suggests a range of measures that can be taken from selective withdrawal of reservoir water, to changes in the flow regime, to altering the structure of the dam to change the depth or manner of withdrawal. *Report to Congress: Dam Water Quality Study* at v-vi.

Further support for the idea that states can make a difference through the regulation of dams can be found in the USGS "Primer" on dams in which USGS concludes that the negative ecological impacts of dams can be better managed through the use of scientific knowledge. *USGS Primer* at 1-9. Similarly, based upon a detailed review of modifications to hydropower dams made by the Tennessee Valley Authority, researchers have concluded that "changes to dam operations can improve the ecological integrity of rivers." Bednarek, A.T. and D.D. Hart, *Modifying Dam Operations To Restore Rivers: Ecological Responses to Tennessee River Dam Mitigation*, 15(3) Ecological Applications at 997-1008 (2005); *see also* Hayes, D.F. et. al. *Enhancing Water Quality In Hydropower System Operations*, 34(3) Water Resources Research at 471-483 (March 1998)(concluding that operational changes in dam projects can increase dissolved oxygen levels without substantially impacting project purposes).

These kinds of water quality improvements resulting from modifications to dam operations offer significant potential for restoring entire watersheds. In a report recommending a watershed approach to improving water quality, the National Research Council recommends that the water quality impacts of dams be considered in watershed planning. *New Strategies for America's Watersheds* at 21-28.[29] The NRC report describes, as an illustration of a successful watershed approach, how the regulation of dams is contributing significantly to the protection of water quality in the Flathead River Basin. *Id.* at p. 22.

EPA and state water pollution control agencies are increasingly seeking to evaluate the potential for improving water quality through innovative regulation of dams. A review of state data submitted to EPA illustrates that there are many river and stream segments listed in states' Section 303(d), 33 U.S.C. § 1313(d), reports to EPA which are water quality impaired as a result of dams.[30] For instance, drawing from this data, researchers compiled a list of fifty-five hydropower projects in the Mississippi River basin associated with water quality impaired waters. John Crossman and Associates, *Evaluation of Hydropower Projects and Identification of Potential Opportunities for Pollutant Trading*, (2001) *available at* http://www.epa.gov/msbasin/pdf/hydropower_final.pdf. In this report, prepared on behalf of EPA, the researchers concluded that:

> [T]hese projects have the potential to make a significant contribution to national water quality objectives if technological advances to improve water quality in reservoirs,

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[29] See also *Regulatory Approaches*, at 15-18.

[30] Summaries of this data, not specific to dams but noting impacts from sources such as hydrologic modifications and flow impairments generally associated with dams, can be found on EPA's *TMDL Website, available at http://www.epa.gov/owow/tmdl/* and EPA's *2002 National Assessment Database, available at* http://www.epa.gov/waters/305b/index.html.

downstream tailwaters, and hydro-turbine releases are employed in a watershed based trading program.

Id. at p. 1.

Based on this kind of reasoning, states are requiring dam operators to employ technological advances and improved understandings of ways in which dam operations can be modified to reduce or minimize impacts on water quality. One typical example of state efforts in this regard can be found in the water quality certification issued by the State of California Water Resources Control Board pursuant to CWA Section 401 for the relicensing of the Lower Tule River Hydroelectric Project. California State Water Resources Control Board, *In the Matter of Water Quality Certification for the Southern California Edison Company Lower Tule River Hydroelectric Project*, FERC Project No. 372 (March 5, 2004), *available at http://www.waterrights.ca.gov/FERC/LowerTule401%20.pdf.* Southern California Edison Company operates this project which is a run-of-the-river dam that has historically impacted downstream water quality and aquatic habitat. Among the conditions in the water quality certification are minimum instream flow requirements and the development of a "Native Aquatic Species Management Plan." The purpose of this plan is to require the dam operator to monitor the impacts of flows through the dam and to ensure that the minimum stream flows protect several species of special concern impacted by the dam including certain species of fish and amphibians. The certification also requires Southern California Edison to monitor and develop actions such as further managing flows in order to minimize temperatures affecting those species.

Another example of the kinds of conditions that states can use in order to achieve water quality improvements can be found in the certification issued by the State of Oregon Department of Environmental Quality for the Pelton Round Butte Hydroelectric Project. FERC, *Portland General*

Electric Company and Confederated Tribes of the Warm Springs Reservation of Oregon, Order Approving Settlement and Issuing New License, Project No. 2030-036, at 23, 109-126, (June 21, 2005) *available at http://www.ferc.gov/whats-new/comm-meet/061505/H-5.pdf.* The project, operated by Portland General Electric Company and the Confederated Tribes of the Warm Spring Reservation of Oregon, includes three dams operated collectively in a modified run-of-the-river mode. Oregon determined that the project blocks fish passage to historic habitat, affects stream flows and thus fish habitat, temperature, and dissolved oxygen in the lower Deschutes River. The Section 401 certification therefore includes a range of conditions to address these problems ranging from fish passage requirements to specific conditions relating to achieving water quality standards for parameters such as temperature, dissolved oxygen, dissolved gas and turbidity. Oregon Department of Environmental Quality, *Evaluation and Findings Report On The Application For Certification Pursuant To Section 401 of the Federal Clean Water Act For the Relicensing of Pelton Round Butte Hydroelectric Project (FERC No. 2030)* (June 19, 2002) *available at http://www.deq.state.or.us/wq/401Cert/401CertHome.htm.*

A brief discussion of the requirements in the Pelton Round Butte certification related to achieving the standards for temperature and dissolved oxygen illustrates the kind of changes that can be made to a dam project without interfering with the project purpose. The Pelton Round Butte certification requires the dam operators to comply with temperature and dissolved oxygen monitoring and management plans. Demonstrating the importance of looking at dam impacts in the context of the entire watershed, Oregon reserves its authority to reevaluate these management plans at the conclusion of TMDLs being developed for both parameters. Further, in order to ensure that the dam can meet the water quality standards, the Pelton Round Butte certification also includes a requirement that the dam operators use a "selective

water withdrawal" facility to draw water from various points within the water column impounded behind the dam. This facility will consist of a tower built into the dam with two gates, one at the surface and one at depth. Through managing the discharge of water through these gates, the dam operators will better be able to meet water quality criteria for temperature and dissolved oxygen criteria. *Id.*

By taking advantage of this kind of approach and using the authority of Section 401, states can lead dam operators to make meaningful improvements in water quality. Continued authority under Section 401 to require and issue water quality certifications is a critical precursor to doing so. Congress clearly intended that states have this authority, and promised, in the Clean Water Act, that government would use its authority to prevent, reduce and eliminate pollution. States and authorized tribes require CWA Section 401 authority over discharges from hydropower dams in order to fulfill this promise.

CONCLUSION

The Court should affirm the decision of the Maine Supreme Judicial Court.

Respectfully Submitted,

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